

UK Patent Application (19) GB (11) 2 271 932 (13) A

(43) Date of A Publication 04.05.1994

(21) Application No 9223003.6

(22) Date of Filing 03.11.1992

(71) Applicant(s)

George Thomas Watts
4 Amesbury Road, Moseley, BIRMINGHAM, B13 8LD,
United Kingdom

(72) Inventor(s)

George Thomas Watts

(74) Agent and/or Address for Service

George Thomas Watts
4 Amesbury Road, Moseley, BIRMINGHAM, B13 8LD,
United Kingdom

(51) INT CL⁵
A61B 17/38

(52) UK CL (Edition M)
A5R RHCE

(56) Documents Cited
EP 0472368 A2 EP 0392837 A2

(58) Field of Search
UK CL (Edition L) A5R RHCE
INT CL⁵ A61B 17/38 17/39
ONLINE DATABASES : WPI

(54) Electrode for tissue coagulation

(57) A collapsible electrode for coagulation of tissue without damage to adjacent structures increases the safety of surgery on the gall-bladder. It is carried in an insulating sheath to protect other structures and allow insertion into the organ whose interior surface is to be coagulated. The electrode is in the form of a basket or cage formed of spiral wires of springy metal.

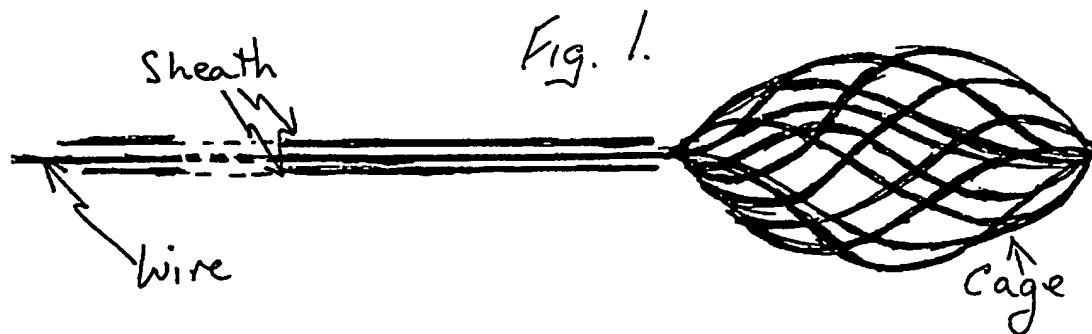


Fig. 1.

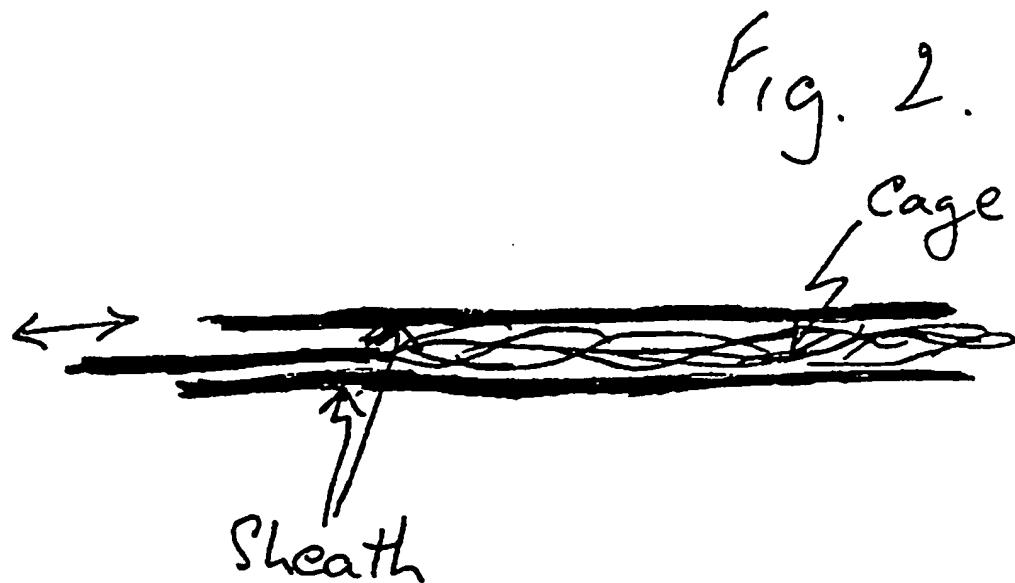


Fig. 2.

GB 2 271 932 A

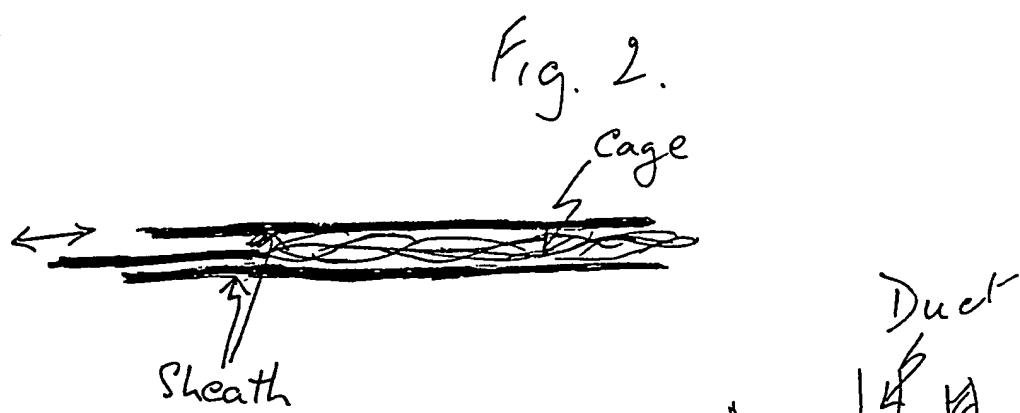
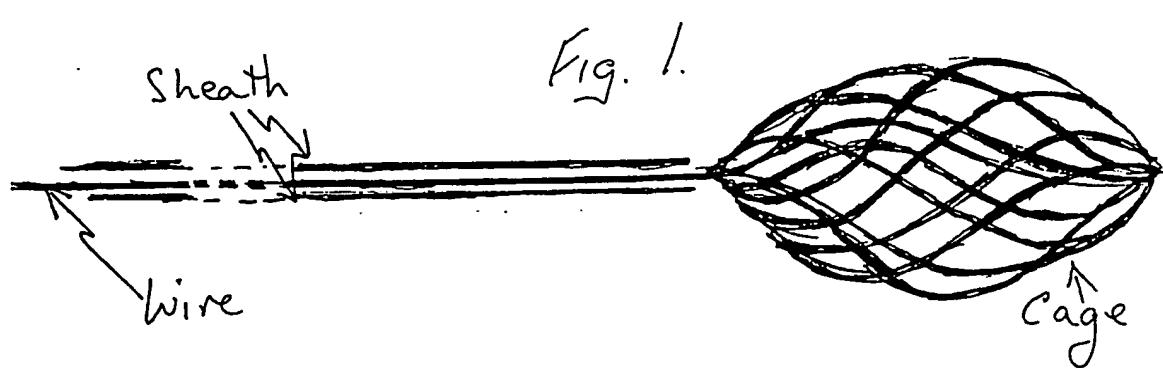
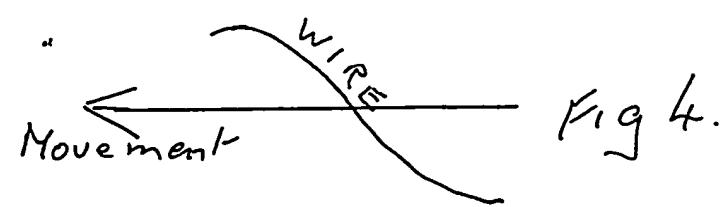
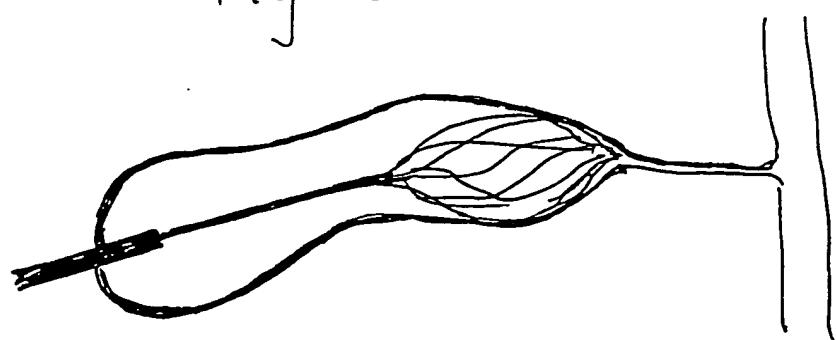


Fig. 3b.



SURGICAL INSTRUMENT for TISSUE COAGULATION

The commonest major abdominal surgical operation is removal of the gall-bladder. This prevents the formation of gall-stones and infection in this backwater of the biliary tree. This operation has as its greatest and sometimes fatal complication, damage to the main ducts between liver and intestines and also to adjacent blood-vessels when the duct (cystic duct) joining gall-bladder and main duct is dissected to remove the organ. The risk is doubled in some more modern operations designed to be done endoscopically (i.e. using special telescopes through small incisions with the object of avoiding conventional large ones). The object of the operation is to close off the backwater of the gall-bladder by removing it, but a procedure to close it off by fibrosis (scarring) has the same effect. This can be done by coagulating the lining electrically or by other means. This removes the need to dissect the vessels and duct in the danger area. (fig. 3 at A). To be effective however, the whole of the lining (mucous membrane) of the gall-bladder must be coagulated to destroy it. This instrument makes this possible from within the organ. Further, since it is easier to perform, it also reduces the time needed for surgery with further advantage in safety and with financial savings from this.

The device is a cage of spiral wires of springy metal joined at both ends as shown in Fig.1. This cage is joined at one end to another thicker wire which is used to pass electrical current to the basket and thence to the mucous membrane of the gall-bladder. This wire can also be used to withdraw the basket into an insulated sheath. It can equally be used to protrude the basket from the sheath as in fig.2. .. This sheath prevents electrical current from reaching other structures such as the abdominal wall. By virtue of the springy nature of the basket and its shape, it is able to collapse to allow it to enter the sheath.

The basket can be made in various sizes to allow for various sizes of gall-bladder.

In use, the sheath with the basket retracted, is passed through the wall of the organ as in fig 3a. The basket is then passed to the end of the organ by pushing on the larger wire. As it is pushed out it expands again to make contact with the wall of the gall-bladder as in fig.3b. An electrical current is then passed to the basket which is drawn back at an appropriate rate for the current used until the basket reaches the proximal end of the organ again when it once more enters the insulated sheath and the current flow is stopped. The spiral shape of the basket wires ensures that the whole surface of the lining is coagulated as the wires lie in a diagonal to the line of movement of the basket (fig.4). After the whole of the mucous membrane has been destroyed, the basket can be fully retracted into the sheath and withdrawn from the body.

This instrument can also be used in open surgery as well as in endoscopic methods and would have the same merits. It can be used on other hollow organs where the size would be adjusted to the size of the organ.

Claims

1. An electrode is described which simplifies operations on the gall-bladder or other organs by substituting coagulation with subsequent scar obliteration for removal removes the need for dangerous dissection.
2. By avoiding such risks in dissection the operation is made safer and quicker.
3. The design of the electrode makes possible coagulation of the entire surface of the lining of the organ so ensuring full destruction of the lining.
4. The instrument can be used on other organs for similar purposes.

Relevant Technical Fields

(i) UK Cl (Ed.L) A5R (RHCE)
(ii) Int Cl (Ed.5) A61B (17/38, 17/39)

Search Examiner
D C BRUNT

Date of completion of Search
13 DECEMBER 93

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASES: WPI

Documents considered relevant following a search in respect of Claims :-
1-4

Categories of documents

X: Document indicating lack of novelty or of inventive step.
Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.
A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.
E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
&: Member of the same patent family; corresponding document.

| Category | Identity of document and relevant passages | | Relevant to claim(s) |
|----------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------|
| X | EP 0472368 A2 | (MED INSTITUTE) see especially column 1 lines 47-52, column 3 lines 36-53, column 5 line 2 - column 6 line 4 | 1-4 |
| X | EP 0392837 A2 | (GEDDES) whole document | 1-4 |

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).